

## ABSTRACT

1       An image processing device of the present invention has a first element which  
2 produces partial straight lines from a straight line. One of the vertical or horizontal  
3 coordinate values of each of the partial straight lines has the same value. The image  
4 processing device has a second element which produces, based on the partial line  
5 produced by the first element, a shading range having a first and second end, wherein  
6 the first end has first color and the second end has second color, and a third element  
7 which converts the first and second colors of the shading range to third and fourth  
8 colors, which express brightness as an independent parameter. The image processing  
9 device also includes a fourth element which produces, by using the third and fourth  
10 colors converted by the third element, colors of respective pixels existing between the  
11 first end and the second end of the shading range produced by the second element,  
12 wherein the color changes smoothly from the first end to the second end.